GASOLINE CONSUMERS' INFORMATION COMMITTEE

PROPANE MARKETING IN ALBERTA

Report of the
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GASOLINE CONSUMERS' INFORMATION COMMITTEE
P.O. Box 1811, Main Post Office
Edmonton, Alberta T5J 2P2

Foreword

The Gasoline Consumers' Information Committee was established in October 1990 by Alberta Energy Minister Rick Orman and Alberta Consumer and Corporate Affairs Minister Dennis Anderson to answer consumer questions about gasoline and propane marketing that arose following the onset of the Persian Gulf Crisis.

In December 1990, the committee released a report which provided answers to a number of questions about gasoline marketing in Alberta. Since then the committee has heard presentations by representatives from propane producers and marketers. In the pages that follow, information gathered by the committee has been used to answer a number of consumer questions frequently asked about propane marketing in Alberta.

Albertans have frequently asked about the relationship between propane and natural gas. The report notes that while the vast majority of Canada's propane is produced jointly with natural gas, propane and natural gas are sold into distinct markets. Because propane competes in a number of applications with crude oil based products, propane prices generally change with crude prices. While propane prices increased with crude oil prices as a result of the Gulf Crisis, natural gas prices did not increase. North American natural gas markets remain in a chronic situation of oversupply, and were largely unaffected by the developments in the Persian Gulf.

Committee Members:

Terry Bocock (Chairman)	Alberta Motor Association
Lynne Arling	Consumers' Association of Canada (Alberta Branch)
Dave Barr	Alberta Motor Association
Merry Chellas	Petroleum Resources Communication Foundation
Corinne van der Linden	Consumers' Association of Canada (Alberta Branch)

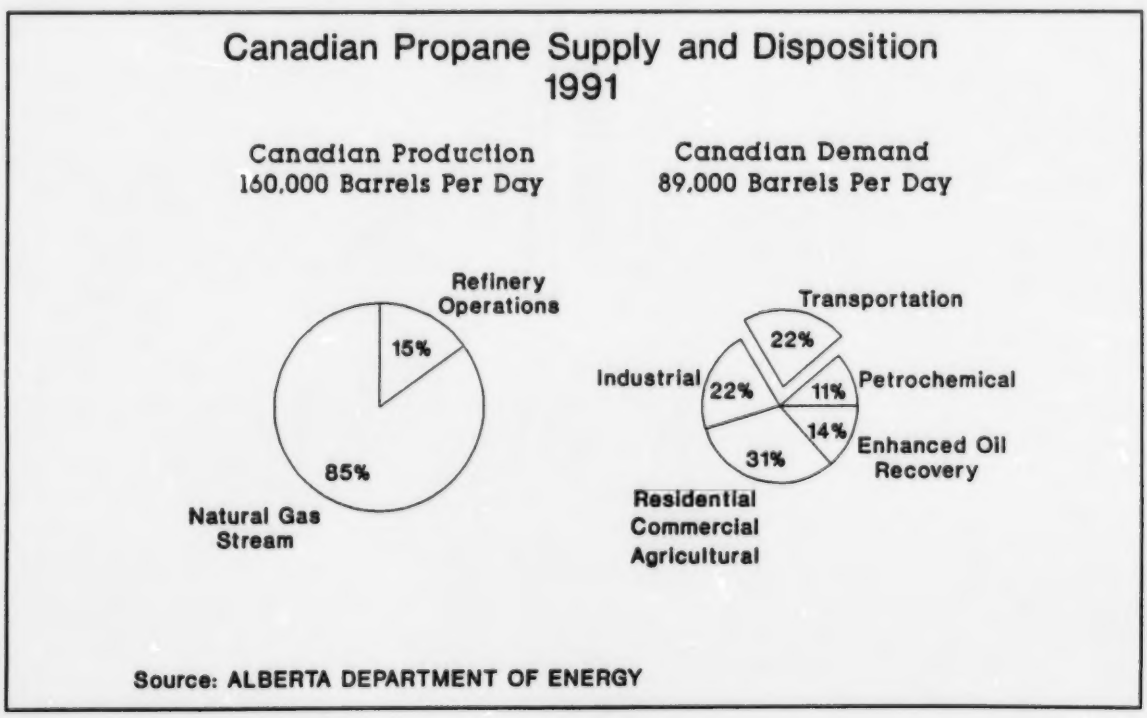
Question 1 Where does propane come from and how is it used?

About 85% of Canada's propane results from the production of natural gas. Natural gas is made up of a number of components that vary in density. Some propane and other more dense components are removed from the natural gas stream at a gas plant located near the well head. This allows the lighter components to flow easily through natural gas pipelines to markets across North America. Additional quantities of propane as well as some lighter components may be further removed from the natural gas stream at more sophisticated gas plants which straddle large pipelines closer to markets. If the prices of the lighter components are weak relative to the price of natural gas, then these components may be simply left in the natural gas stream and sold as natural gas.

The remaining 15% of Canada's propane production results from the refining of crude oil into petroleum products.

Alberta accounts for over 85% of Canada's propane production, of which all but 20% is exported from the province to markets across North America.

Propane is used in a wide variety of energy and non-energy applications. The figure below provides an estimate of Canadian propane production and usage for 1991:



In 1991, Canada is expected to produce about 160,000 barrels (25.4 million litres) of propane per day. Of this, about 45% will be exported to markets in the United States.

Of the remaining 89,000 barrels (14.1 million litres) per day of propane consumed in Canada, about 25% is used in non-energy applications. This would include the use of propane as a raw material in the petrochemical industry. It also includes propane that is injected into oil reservoirs to enhance oil recovery.

The remaining portion of domestic propane consumption is used as a fuel. The largest segment, 31%, is used in residential, commercial and agricultural applications, which include heating, cooking, and crop drying.

About 22% is used in industrial applications, such as powering industrial vehicles such as fork lifts. This would also include propane used for heat and power on construction sites as well as cooking and vehicle power on remote projects such as mining operations.

The final 22% is used as a transportation fuel. The vast majority is delivered by distributors directly to bulk customers. The remaining volumes are sold through retail outlets, although most of these sales are made to commercial fleet operators.

In Canada about 150,000 vehicles or about five per cent of the commercial vehicle fleet currently operate on propane. In Alberta, there are about 35,000 vehicles operating on propane.

Question 2 What factors affect the price of propane?

Propane is used throughout North America in a wide variety of energy and non-energy applications. In most applications, propane is considered an alternative fuel. This means that the demand for propane depends heavily on how it is priced relative to other primary and other secondary fuels. It is important to note, that while propane is produced jointly with natural gas, propane and natural gas are sold into distinct markets, and thus propane prices are largely unaffected by natural gas prices.

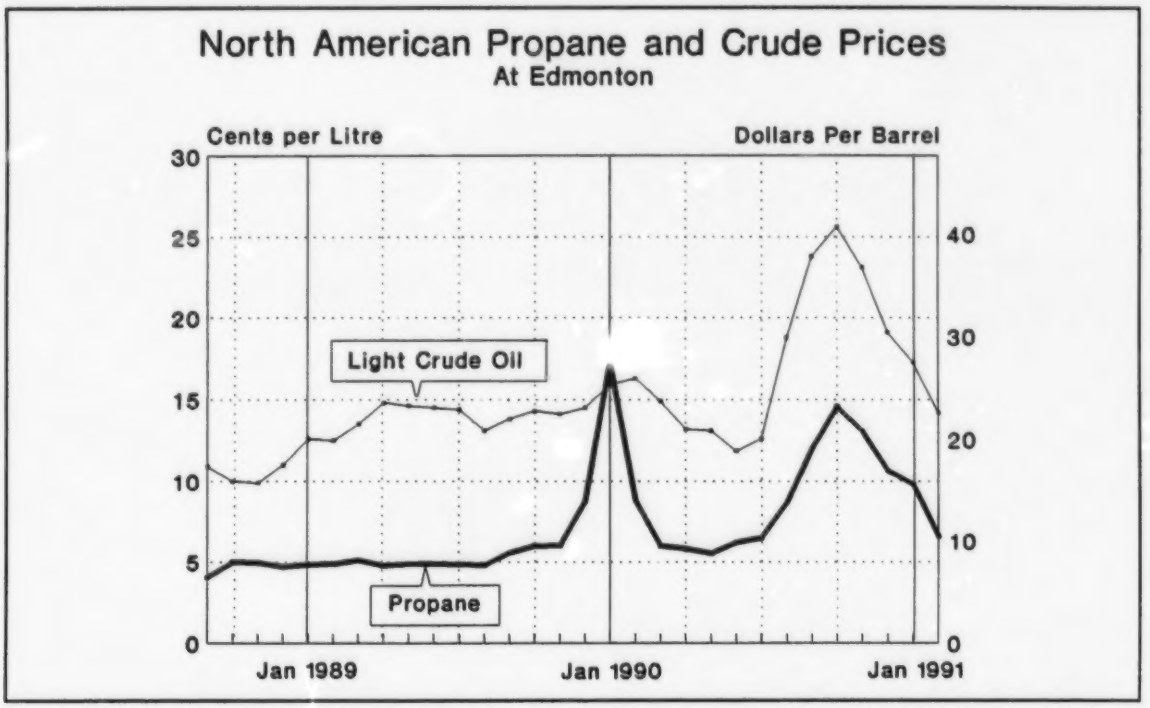
In the petrochemical industry, for example, the demand for propane can be quite sensitive to the price of other components removed from the natural gas stream such as butane, which can be used in its place. The demand for propane is particularly sensitive to the price of crude oil because it can be used as a substitute for naphtha, an important crude oil derivative used in the petrochemical industry.

As noted above, propane is also an important heating fuel. In this application, propane must compete with heating oil and be priced favourably to encourage conversion. Because many of these applications are seasonal and subject to weather fluctuations, propane prices may also exhibit seasonal and weather related fluctuations.

As a transportation fuel, propane must remain competitively priced relative to gasoline to encourage conversion, although the demand is probably subject to less variation than some of its other uses.

All of these factors mean that the price of propane in North America fluctuates throughout the year. Since Alberta exports the bulk of its propane to markets across North America, movements in North American propane prices are quickly reflected in the price paid and received by Alberta buyers and sellers.

Since propane competes with petroleum products in a number of applications, wholesale propane prices generally follow movements in crude prices. The figure below compares wholesale propane prices and crude oil prices at Edmonton from September 1988.



While wholesale propane prices generally track crude prices, there are exceptions. In January 1990, for example, propane prices in North America almost tripled during an extreme cold spell. This was largely driven by a shortage of propane for residential heating in the U.S. northeast, but was made worse by transportation problems.4

Following the outbreak of hostilities in the Persian Gulf last summer, North American propane prices increased sharply along with North American crude oil prices. Distributors throughout North America were forced to bid aggressively for propane supplies in anticipation of a severe oil supply disruption. Now that oil prices have moderated, propane prices have also slipped back.

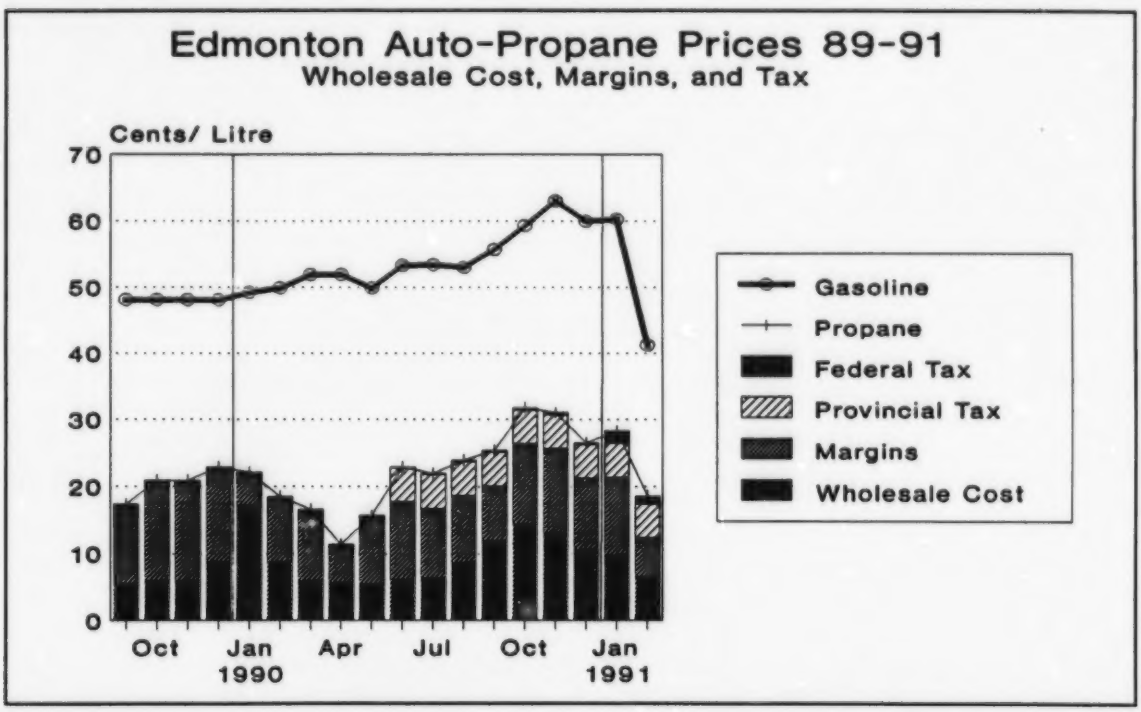
As noted previously, propane and natural gas are sold into relatively distinct markets. Thus, while propane prices increased with crude oil prices as a result of the Gulf Crisis, natural gas prices did not increase. North American natural gas markets remain in a chronic situation of oversupply, and have largely been unaffected by the developments in the Persian Gulf.

Question 3 **What goes into the cost of auto propane in Alberta?**

There are three main components that make up the cost of auto propane:

Wholesale Propane Acquisition Costs
Federal and Provincial Taxes
Distribution and Retailing Margins

The figure below provides a monthly breakdown of these components for Edmonton since the fall of 1989.



Wholesale Propane Acquisition Costs

In Alberta, propane marketers purchase propane at gas plants or refineries for distribution to retail outlets and bulk customers. Because producers have ready access to markets across North America, marketers pay prices which closely reflect movements in North American wholesale prices.

As noted above, wholesale prices increased sharply during the cold spell at the beginning of 1990, then quickly fell to the 6 cent per litre range for the balance of the spring and summer. Following the onset of the Gulf Crisis, wholesale propane prices increased with crude prices, peaking at just under 15 cents per litre in October. As crude prices moderated, propane prices followed, averaging about 6.5 cents per litre in February.

Unlike gasoline, for which changes in crude prices take between one and two months to affect pump prices, changes in wholesale propane prices may work their way through to the consumer in less than a week. This is because propane is readily available throughout the province and requires no additional processing. Inventories are also small because propane is stored as a liquid under pressure, which makes it very costly to store and handle.

Federal and Provincial Taxes

Federal and provincial taxes on the sale of auto propane increased significantly in the past year. Federal sales tax, as applied prior to the beginning of 1991, averaged less than 0.2 cents per litre. With the introduction of the new 7% Goods and Services Tax on January 1, 1991, federal tax would now amount to 1.64 cents per litre on propane selling at 25 cents per litre.

In June 1990, the province introduced a 5 cent per litre tax on auto propane.

Distribution and Retailing Margin

This margin represents the share of the auto propane dollar that goes to cover the costs of distributing and marketing propane, including profits and income taxes.

Over the last year and a half, this margin has ranged from just under 15 cents per litre in the fall of 1989 to less than 5 cents per litre during the cold spell in January 1990. The average margin has been about 11 cents per litre.

There are a number of important differences in the cost of marketing propane compared to gasoline:

- Marketers transport and store propane as a liquid in pressurized storage tanks. These facilities typically hold small volumes, and cost more to acquire and maintain than gasoline facilities.

- Employees require special training to handle propane. This means that propane cannot be sold on a self-serve basis. Propane vehicles take longer to fill and cannot be left unattended. All of these factors impose additional costs on propane marketers.

- Currently, the volume of propane sold in a typical outlet is only about 10% of gasoline sales. This means the cost of storage and filling equipment must be borne by relatively low sales volumes, which lead to higher costs per litre.

- Major propane marketers also bear the costs of developing and maintaining service networks to support and encourage propane conversions.

Over the past few months, the distribution and retailing margin has been fairly stable. This indicates that the price of auto propane has moved in line with changes in the North American wholesale price of propane.

Question 4 **How does the price of auto propane compare with the price of gasoline?**

In theory, a litre of liquid propane contains about 73% of the energy of a litre of gasoline. In practice, the gap is smaller because some engines operate more efficiently when converted to propane.

To encourage conversions, however, propane marketers would like auto propane prices to remain between 40 and 60 per cent of the price of gasoline. The figure on page 5 shows that over the last year and a half, auto propane prices in Edmonton have remained in this range.

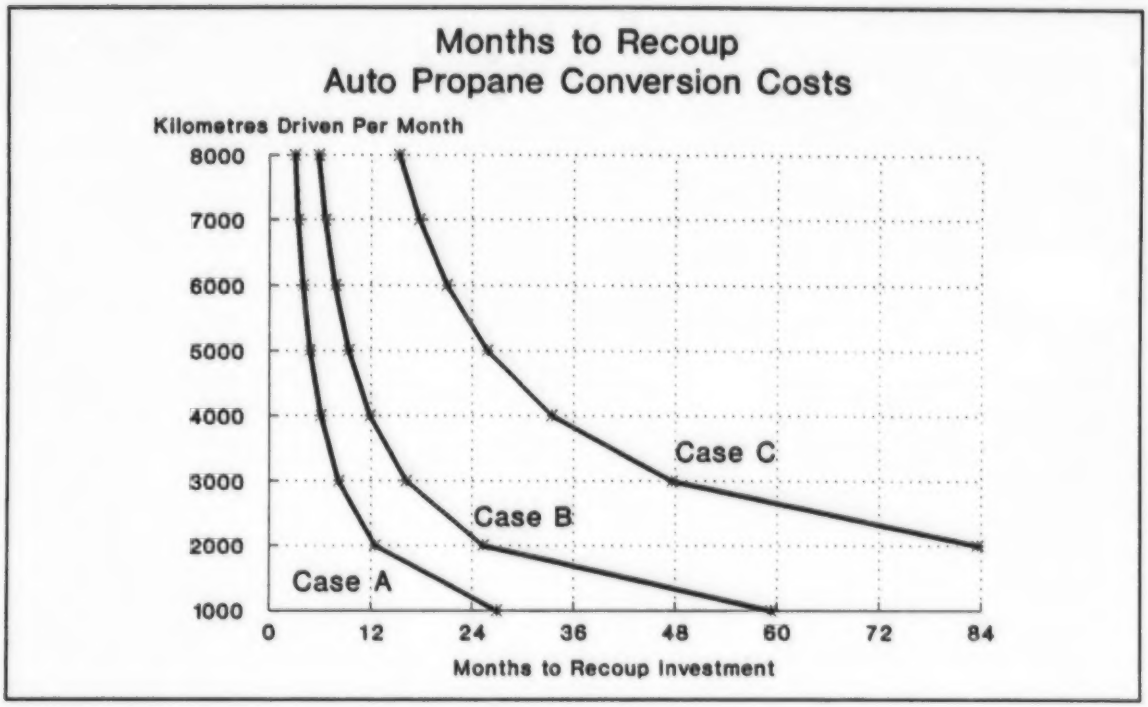
As with gasoline, propane prices have varied quite substantially across the province, and indeed within the same community for short periods of time. Prices tend to be higher in markets where the sales volume per outlet is small, and competition is less intense.

Question 5 **When is it economic to convert a vehicle to propane?**

Propane powered vehicles offer savings in fuel costs over gasoline powered vehicles because the low price more than offsets the increase in the amount of propane that is needed. For a conversion to be worthwhile, savings in future fuel costs must be sufficiently large to overcome the initial costs of converting a vehicle. The more fuel used, the more likely it is that a conversion would be considered economic.

Converting a vehicle to run on propane involves the installation of a pressurized fuel tank, running fuel lines to the engine compartment, and slight modification to the engine's fuel intake apparatus. Conversion costs generally range from about $1,500 to $2,500. The main difference in cost is due to the size and type of tank and the complexity of the installation. Installing a medium-sized tank in the back of an open pick-up truck would be at the low end. Converting a medium-sized passenger car would typically cost under $2,000.

The figure on page 8 provides an indication of how long it would take to recoup the initial costs of converting a vehicle under three different sets of circumstances. The details of the three cases are outlined in the box below the figure. The lines decline from left to right indicating that as fewer kilometres are driven in a month, it will take more months to recoup the initial conversion cost. Gasoline prices are assumed to remain at 50 cents per litre and propane 25 cents per litre throughout.



Case A **Pick-up truck with a large engine**

Initial conversion cost	$1,600
Gasoline usage rate	30 litres per 100 km (9.4 MPG)
Additional propane required	10%

Case B **Delivery van or large passenger car with a simple installation**

Initial conversion cost	$1,800
Gasoline usage rate	20 litres per 100 km (14.1 MPG)
Additional propane required	20%

Case C **Smaller passenger car with a more difficult installation**

Initial conversion cost	$2,000
Gasoline usage rate	10 litres per 100 km (28.2 MPG)
Additional propane required	30%

The vast majority of vehicles converted to propane are high-mileage commercial fleet vehicles, or vehicles with large eight-cylinder engines.